U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-260 231

RADIUM MONITORING NETWORK. DATA RELEASE NUMBER 16

PUBLIC HEALTH SERVICE
DENVER, COLORADO

JANUARY 1970

257055

PB 260 231

RADIUM MONITORING NETWORK

DATA RELEASE NO. 16

U. S. DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
COLORADO RIVER BASIN WATER QUALITY CONTROL PROJECT
DENVER, COLORADO

JANUARY 1970

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

BIBLIOGRAPHIC DATA SHEET	1. Report No.	2.	3. Recipient's Accession No. PB-260 231
4. Title and Subtitle: Radium Monitoring Network. Data Release Number 16.			5. Report Date: Jan 70
			6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address: Public Health Service, Denver, Colo. Div. of Water Supply and Pollution Control.			10. Project/Task/Work Unit No.
			11. Contract/Grant No.
12. Sponsoring Organization Name and Address			13. Type of Report & Period Covered
			14.

15. Supplementary Notes
Report on Colorado River Basin Water Quality Control Project.

16. Abstracts
This sixteenth data release report provides radium-226 and uranium sampling results that supplement data from 15 previous reports dated October 1962 through July 1969. The tabular data indicate evidence of radium and uranium below recommended concentration levels from analysis of composite water samples at stations of the Radium Monitoring Network of the Colorado River Basin Water Quality Control Project. The network is a surveillance system consisting of continuous surface water sampling at 27 locations throughout the basin. It assays the radiological content of river water over the entire basin.

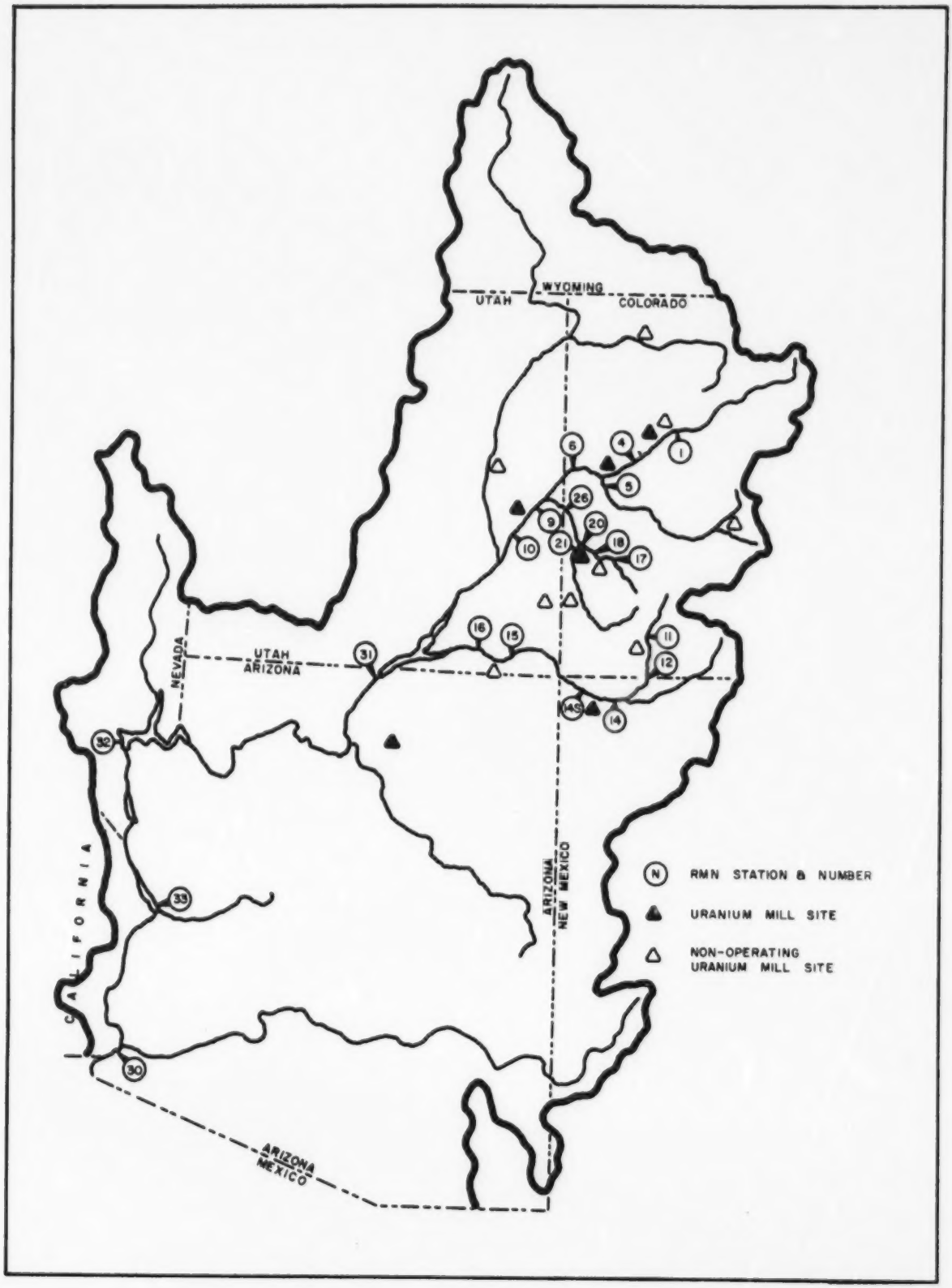
17. Key Words and Document Analysis. 17a. Descriptors

17b. Identifiers/Open-Ended Terms

Colorado River
Dolores River
River basins
*Radium
Drinking water
Water supply
Rivers
*Water quality data
Water pollution sampling
State agencies
Surface waters
Tables(Data)
*Uranium
Mining
Radioactive wastes
Industrial wastes
Fallout

17c. COSATI Field/Group 13B

18. Availability Statement	19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 32
	20. Security Class (This Page) UNCLASSIFIED	22. Price



GPO 851-409

COLORADO RIVER BASIN RADIUM MONITORING NETWORK

COLORADO RIVER BASIN WATER QUALITY CONTROL PROJECT

RADIUM MONITORING NETWORK DATA RELEASE NO. 16

INTRODUCTION

This is the sixteenth release of data collected through the Radium Monitoring Network, which is maintained by the Colorado River Basin Water Quality Control Project, Federal Water Pollution Control Administration. The purpose of this release is to supplement data given in the fifteen previous releases dated October 1962 through July 1969.

Summary reports of Radium Monitoring Network data collected through December 1967 were published in the November 1964, November 1965, May 1968, and December 1968 issues of Radiological Health Data. The November 1964 issue also gives data on sediments collected through March 1964 and on some waters and sediments collected prior to the establishment of the Radium Monitoring Network.

The Radium Monitoring Network is a surface water surveillance system consisting currently of nineteen sampling stations located on various streams and reservoirs throughout the Colorado River Basin. During initial stages of the surveillance program, the system consisted of twenty-seven sampling stations. The purpose of the network is to provide continuous monitoring of radioactivity concentrations of Basin surface water so that the contribution from uranium mining and milling industry waste discharges can be determined. Samples are analyzed for radium-226, uranium, gross alpha, gross beta, thorium (alpha), lead-210, polonium-210, and strontium-90 to provide a comprehensive picture of contributions of radiological contaminants to surface waters of the Colorado River Basin by the uranium industry and by fallout from the testing of nuclear devices.

SAMPLING PROCEDURES

Depending upon circumstances prevailing at individual stations, Radium Monitoring Network (RMN) samples are collected as either automatic or grab samples. Grab samples are collected once or three times per week and automatic samples are collected in 21-ml. portions every hour. The samples are sent as collected to the Colorado River Basin Water Quality Control Project Laboratory where they are composited and filtered through 0.45-micron membrane filters as soon as possible after the samples for the compositing period are received. After filtration, samples are acidified with 2% by volume of 12N HCl and radiochemical determinations are then performed on the filtered water and on suspended solids separated from the water.

SIGNIFICANT FIGURES

After a careful consideration of the accuracies and precisions involved in the various analytical procedures, it was decided to report data to two significant figures except in those instances where the lower limit of detection was being approached. In the latter instances, only one significant figure is reported. The last significant figure is usually an estimate.

In averages, three figures are retained if the precision and significance of the averaged data justify such retention. Thus, the overall averages for radium-226 at Stations 11 and 26 are reported, respectively, as 0.05 and 1.20 picograms per liter (Table 1).

ERROR

Standard deviations of results reported in Table 3 are at the 95 per cent confidence level (1.96σ).

Standard deviations of the previous year mean are reported for an individual value at the 68.27 per cent confidence level (1σ).

RESULTS

The appendix contains the data on dissolved radium-226 and uranium in samples collected since those which were reported in the fifteenth data release along with arithmetical means for the current reporting period and for the previous year. A summary of all data on radium-226 and uranium is given in Table 1. Mean annual concentrations of radium-226 for each station are given in Table 2. Gross alpha, gross beta, lead-210, polonium-210, thorium (alpha), and strontium-90 data on samples collected at selected stations through June 1968 were reported in Data Release Nos. 7, 8, 10, 11, 12, and 15. Available additional data on these parameters are given in Table 3.

Radium-226 concentrations at all stations average below recommended maximum concentrations. As compared with results from the previous reporting period, ten stations showed lower or unchanged concentrations of radium-226. No significant increases of radium-226 concentrations occurred. With regard to the absolute concentration, the radium-226 concentrations at Stations 20 and 26 dropped significantly. Uranium concentrations at all stations decreased or remained the same. The decrease was particularly noticeable at Stations 20 and 26.

Results of radiochemical analyses of quarterly composites of samples from selected stations are given in Table 3. Gross alpha and gross beta activity concentrations were somewhat higher at Stations 9, 10, and 20 than at the other three stations. There was no noticeable difference in the activity above and below Moab. The concentrations were higher below the uranium mill at Uravan, Colorado, than at the other stations. A health hazard may exist at this station if the combined contribution from radium-226 and strontium-90 to the gross activity exceeds the recommended maximum concentration. Thorium, lead-210, and polonium-210 concentrations are slightly above background levels at some stations but are of no significance insofar as health hazards are concerned. Strontium-90 concentrations are below the recommended maximum concentration.

TABLE 1

RADIUM-226 AND URANIUM CONCENTRATIONS IN SURFACE WATERS OF THE COLORADO RIVER BASIN

Station Number and Location	Radium-226 Av.[a] pg/l	Radium-226 Range pg/l	Radium-226 No. of Analyses	Uranium Av.[a] µg/l	Uranium Range µg/l	Uranium No. of Analyses
Animas River						
11 above Durango, Colorado	0.05	0.00-0.11	93	1.4	0.1-3.4	87
12 Colorado-New Mexico State Line	0.23	0.03-1.5	132	3.1	0.0-18	90
Colorado River						
1 at Silt, Colorado	0.19	0.04-0.39	98	3.2	0.0-5.3	84
4 at DeBeque, Colorado	0.18	0.05-0.44	99	3.7	0.4-7.2	84
6 at Fruita, Colorado	0.17	0.08-0.40	93	8.3	2.0-14	84
9 above Moab, Utah	0.25	0.10-0.52	125	9.5	2.4-31	112
10 below Moab, Utah	0.45	0.13-7.2	121	11	2.2-22	108
30 at Yuma, Arizona	0.16	0.06-0.33	89	7.5	2.0-11	84
31 at Page, Arizona	0.18	0.04-0.36	71	6.7	2.8-13	72
32 Lake Mead	0.32	0.17-0.60	79	7.8	5.0-11	79
33 Lake Havasu	0.34	0.18-0.44	70	7.8	5.4-11	70
Dolores River						
21 at Bedrock, Colorado	0.41	0.03-1.4	96	9.5	0.1-35	83
26 at Gateway, Colorado	1.18	0.04-3.8	134	16	0.1-51	112
Green River						
28 below Maybell, Colorado	0.09	0.03-0.15	36	2.7	0.6-8.0	32
29 below Green River, Utah	0.09	0.05-0.15	29	5.0	1.6-7.6	26

TABLE 1 (Contd)

RADIUM-226 AND URANIUM CONCENTRATIONS IN SURFACE WATERS OF THE COLORADO RIVER BASIN

Station Number and Location	Radium-226 Av.[a] pg/l	Radium-226 Range pg/l	Radium-226 No. of Analyses	Uranium Av.[a] µg/l	Uranium Range µg/l	Uranium No. of Analyses
Gunnison River						
24 above Gunnison, Colorado	0.05	0.01-0.08	43	1.2	0.0-2.6	33
25 below Gunnison, Colorado	0.04	0.01-0.09	46	2.3	0.4-4.3	33
5 at Grand Junction, Colorado	0.09	0.01-0.30	92	10	0.7-19	83
San Juan River						
13 above Farmington, N. M.	0.07	0.03-0.16	20	2.8	0.0-8.3	19
14 below Farmington, N. M.	0.07	0.03-0.21	85	2.9	0.3-9.0	84
14S below Shiprock, N. M.	0.08	0.03-0.28	165	9.1	0.1-93	161
15 above Mexican Hat, Utah	0.11	0.04-0.66	84	5.8	1.0-23	71
16 below Mexican Hat, Utah	0.12	0.01-0.84	161	8.2	0.8-35	143
San Miguel River						
17 above Naturita, Colorado	0.04	0.00-0.14	112	2.4	0.0-8.2	84
18 above Uravan, Colorado	0.19	0.03-1.2	145	5.5	0.8-63	114
20 below Uravan, Colorado	1.53	0.06-26	385	23	0.0-260	356

a Average concentration obtained from all data presented in this and previous data releases.

TABLE 2

MEAN ANNUAL CONCENTRATIONS OF RADIUM-226
IN WATER AT MONITORING NETWORK STATIONS, 1961-1968

Values in Picograms per Liter

RMN Station No.	Location	Years 1961	1962	1963	1964	1965	1966	1967	1968
1	Colorado River at Silt, Colorado	0.18	0.15	0.23	0.25	0.16	0.20	0.20	0.19
4	Colorado River above DeBeque, Colorado	0.20	0.16	0.23	0.22	0.17	0.18	0.19	0.18
5	Gunnison River above Grand Junction, Colo.	--	0.07	0.11	0.12	0.07	0.09	0.08	0.08
6	Colorado River near Fruita, Colorado	--	0.17	0.21	0.18	0.17	0.16	0.17	0.14
9	Colorado River above Moab, Utah	0.34	0.24	0.29	0.27	0.19	0.26	0.28	0.24
10	Colorado River below Moab, Utah	0.41	0.33	0.54	0.32	0.27	0.39	0.93	0.45
11	Animas River at Durango, Colorado	0.05	0.05	0.06	0.05	0.04	0.05	0.05	0.05
12	Animas River at Colo.-N. M. State Line	0.37	0.37	0.23	0.13	0.09	0.09	0.09	0.07
13	San Juan River above Farmington, N. M.	--	0.08	0.07	0.04	--	--	--	--
14	San Juan River at Fruitland, New Mexico	--	0.12	0.12	0.07	0.06	0.05	0.06	0.06
14S	San Juan River below Shiprock, N. M.	--	0.11	0.12	0.09	0.06	0.05	--	--
15	San Juan River above Mexican Hat, Utah	0.18	0.15	0.13	0.14	0.07	0.08	0.08	0.09
16	San Juan River below Mexican Hat, Utah	0.34	0.24	0.16	0.09	0.07	0.07	0.08	0.07
17	San Miguel River above Naturita, Colorado	0.02	0.04	0.04	0.05	0.05	0.05	0.04	0.04
18	San Miguel River above Uravan, Colorado	0.14	0.21	0.33	0.14	0.16	0.13	0.12	0.11
20	San Miguel River below Uravan, Colorado	0.98	0.84	1.34	0.86	0.46	1.92	1.57	3.37
21	Dolores River at Bedrock, Colorado	0.85	0.39	0.45	0.61	0.28	0.33	0.50	0.30
22	Tomichi Creek above Gunnison, Colorado	0.02	--	--	--	--	--	--	--
24	Gunnison River above Gunnison, Colorado	0.03	0.05	0.05	0.05	0.04	--	--	--
25	Gunnison River below confluence of Tomichi Creek, Gunnison, Colorado	0.04	0.04	0.05	0.04	0.03	--	--	--
26	Dolores River at Gateway, Colorado	0.42	1.38	1.03	1.13	0.67	1.20	1.22	1.78
28	Yampa River below Maybell, Colorado	0.11	0.09	0.09	0.09	0.06	--	--	--
29	Green River below Green River City, Utah	--	0.06	0.10	0.09	--	--	--	--
30	Colorado River at U. S.-Mexican Border	--	0.15	0.17	0.18	0.16	0.16	0.17	0.14
31	Colorado River at Page, Arizona	--	--	0.25	0.25	0.17	0.15	0.14	0.16
32	Colorado River at (Lake Mead) Boulder City, Nevada	--	--	0.33	0.31	0.41	0.41	0.32	0.22
33	Colorado River at Metropolitan Water District Intake, Lake Havasu, Cal.-Ariz.	--	--	0.35	0.36	0.36	0.39	0.34	0.26

TABLE 3

RADIOCHEMICAL ANALYSIS OF QUARTERLY COMPOSITE RMN WATER SAMPLES

Station Number and Location	Quarter Period[1]	Gross α pc/l	Gross β pc/l	Sr-90 pc/l	Th (α) pc/l	Pb-210 pc/l	Po-210 pc/l	Date of Po-210 Determination
RMN 4								
Colorado River at DeBeque, Colorado	1	3.9±0.8	5.6±2.0	0.1±0.1	.05±.04	--	--	--
	2	3.4±0.8	7.0±2.0	0.1±0.5	--	--	--	--
	3	4.4±1.0	5.6±1.1	0.3±0.1	--	--	--	--
	4	2.0±0.4	7.1±1.5	0.5±0.1	--	--	--	--
	5	2.6±0.7	5.0±0.9	0.4±0.1	--	--	--	--
RMN 9								
Colorado River above Moab, Utah	1	7.3±1.1	15±2	1.6±0.1	--	--	--	--
	2	8.6±1.5	20±4	0.1±0.6	--	--	--	--
	3	8.4±1.7	11±3	0.4±0.1	--	--	--	--
	4	4.9±0.7	5.9±3.6	0.7±0.1	--	--	--	--
	5	16±2	18±4	1.3±0.1	--	--	--	--
RMN 10								
Colorado River below Moab, Utah	1	7.5±1.1	19±2	--	0.17±0.05	0.5±0.1	0.21±0.05	1/27/70
	2	8.5±1.5	17±4	--	0.02±0.05	0.2±0.1	0.00±0.04	1/27/70
	3	8.0±0.8	6.8±2.8	--	0.00±0.05	0.1±0.1	0.00±0.05	1/27/70
	4	4.4±1.1	5.7±2.9	--	0.01±0.05	0.0±0.1	0.01±0.04	1/28/70
	5	14±2	13±3	--	0.01±0.05	0.2±0.2	0.08±0.06	1/28/70
RMN 15								
San Miguel River above Mexican Hat, Utah	1	--	--	--	--	--	--	--
	2	--	--	--	--	--	--	--
	3	4.2±0.5	1.8±1.9	1.1±0.1	--	--	--	--
	4	1.9±0.6	3.4±2.1	0.7±0.1	--	--	--	--
	5	3.1±0.7	9.7±1.7	2.1±0.1	--	--	--	--

TABLE 3 (Contd)

RADIOCHEMICAL ANALYSIS OF QUARTERLY COMPOSITE RMN WATER SAMPLES

Station Number and Location	Quarter Period 1/	Gross α pc/l	Gross β pc/l	Sr-90 pc/l	Th (α) pc/l	Pb-210 pc/l	Po-210 pc/l	Date of Po-210 Determination
RMN 16								
San Juan River below Mexican Hat, Utah	1	--	--	--	--	--	--	--
	2	--	--	--	--	--	--	--
	3	3.5±0.5	8.0±2.0	--	0.00±0.05	0.0±0.1	0.00±0.05	1/27/70
	4	2.2±0.7	4.1±2.1	--	0.00±0.05	0.0±0.1	0.02±0.04	1/28/70
	5	3.1±0.7	9.8±1.7	--	0.00±0.05	0.1±0.1	0.01±0.04	1/28/70
RMN 20								
San Miguel River below Uravan, Colorado	1	20±2	19±2	--	0.56±0.06	0.1±0.1	0.00±0.05	1/27/70
	2	68±3	47±7	--	0.61±0.07	0.5±0.1	0.30±0.05	1/27/70
	3	52±3	50±5	--	0.34±0.06	0.3±0.1	0.12±0.05	1/28/70
	4	7.9±1.3	9.6±2.8	--	0.04±0.05	0.0±0.1	0.05±0.04	1/28/70
	5	14±1	9.1±2.8	--	0.15±0.05	0.0±0.1	0.02±0.04	1/28/70

1/ Quarter Period

1 July - September 1968
2 October - December 1968
3 January - March 1969
4 April - June 1969
5 July - September 1969

A P P E N D I X

Results of Radium-226 and Uranium Analyses of Samples
from Individual Radium Monitoring Network Stations
for Current Reporting Period

RMN Station 1: Colorado River at Silt, Colorado
Started: November 25, 1961
Type: Three grab samples per week (prior to 7/1/68)
One grab sample per week (after 7/1/68)

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 7	0.14	4.2
May 5	0.06	2.4
June 9	0.06	1.3
July 7	0.10	2.6
August 27	0.19	3.4
September 25	0.20	4.0
Current reporting period:		
Mean	0.13	3.0
Previous year (April 1968-March 1969):		
Mean	0.19	3.3
Std. Dev.	0.08	1.4

RMN Station 4: Colorado River above DeBeque, Colorado
Started: November 21, 1961
Type: Three grab samples per week (prior to 7/1/68)
One grab sample per week (after 7/1/68)

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 7	0.16	5.3
May 5	0.09	2.4
June 9	0.06	2.0
July 7	0.08	4.3
August 27	0.15	4.1
September 25	0.13	5.0
Current reporting period:		
Mean	0.11	3.9
Previous year (April 1968-March 1969):		
Mean	0.16	4.0
Std. Dev.	0.05	1.7

RMN Station 5: Gunnison River above Grand Junction, Colorado
Started: April 16, 1962
Type: Three grab samples per week (prior to 7/1/68)
One grab sample per week (after 7/1/68)

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 10	0.07	4.9
May 8	0.07	4.3
June 12	0.05	7.2
July 22	0.15	9.8
August 29	0.08	13
Current reporting period:		
Mean	0.08	7.8
Previous year (April 1968-March 1969):		
Mean	0.08	9.5
Std. Dev.	0.04	4.1

RMN Station 6: Colorado River at Fruita, Colorado
Started: April 16, 1962
Type: Three grab samples per week (prior to 7/1/68)
One grab sample per week (after 7/1/68)

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 10	0.08	6.5
May 8	0.08	3.7
June 12	0.09	4.6
July 10	0.10	6.3
August 13	0.13	10
September 10	0.11	12
Current reporting period:		
Mean	0.10	7.2
Previous year (April 1968-March 1969):		
Mean	0.14	7.7
Std. Dev.	0.03	2.6

RMN Station 9: Colorado River above Moab, Utah
Started: December 11, 1961
Type: Three grab samples per week

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
March 31-May 2	0.19	5.6
May 5-May 30	0.11	4.3
June 2-June 27	0.13	4.8
September 22	0.34	16
Current reporting period:		
Mean	0.19	7.7
Previous year (April 1968-March 1969):		
Mean	0.22	8.2
Std. Dev.	0.08	3.1

RMN Station 10: Colorado River below Moab, Utah
Started: December 11, 1961
Type: Three grab samples per week

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
March 31-May 2	0.20	5.8
May 5-May 30	0.13	4.2
June 2-June 27	0.14	5.6
September 22	0.29	17
Current reporting period:		
Mean	0.19	8.2
Previous year (April 1968-March 1969):		
Mean	0.29	9.4
Std. Dev.	0.07	3.5

RMN Station 11: Animas River at Durango, Colorado
Started: July 17, 1961
Type: One grab sample per week

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 4-April 24	0.04	2.3
May 30	0.03	1.9
June 13-June 27	0.02	1.2
July 11-August 1	0.05	3.1
August 8-August 28	0.05	1.1
September 4-September 26	0.05	2.0
Current reporting period:		
Mean	0.04	1.9
Previous year (April 1968-March 1969):		
Mean	0.05	2.0
Std. Dev.	0.02	1.0

RMN Station 12: Animas River at Colorado-New Mexico State Line
Started: January 19, 1961
Type: Three grab samples per week (prior to 7/1/68)
One grab sample per week (after 7/1/68)

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
July 24	0.04	1.4
September 3	0.08	2.3
Current reporting period:		
Mean	0.06	1.9
Previous year (July 1968-June 1969):		
Mean	0.08	2.4
Std. Dev.	0.02	0.8

RMN Station 14: San Juan River at Fruitland, New Mexico
Started: August 1, 1962
Type: One grab sample per week

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 23	0.04	3.1
May 29	0.05	2.3
June 24	0.05	1.5
July 27	0.06	2.5
September 3	0.07	3.0
Current reporting period:		
Mean	0.05	2.5
Previous year (April 1968-March 1969):		
Mean	0.06	2.9
Std. Dev.	0.02	1.2

RMN Station 15: San Juan River above Mexican Hat, Utah
Started: December 11, 1961
Type: Three grab samples per week (prior to 7/1/68)
One grab sample per week (after 7/1/68)

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 22	0.09	2.9
May 28	0.08	1.9
June 23	0.07	2.1
July 23	0.11	3.1
September 2	0.08	5.0
Current reporting period:		
Mean	0.09	3.0
Previous year (April 1968-March 1969):		
Mean	0.08	3.9
Std. Dev.	0.04	1.8

RMN Station 16: San Juan River below Mexican Hat, Utah
Started: December 11, 1961
Type: Three grab samples per week (prior to 7/1/68)
One grab sample per week (after 7/1/68)

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 22	0.09	3.6
June 23	0.06	2.1
July 23	0.13	3.2
September 2	0.10	5.0
Current reporting period:		
Mean	0.10	3.5
Previous year (April 1968-March 1969):		
Mean	0.07	4.1
Std. Dev.	0.02	1.9

RMN Station 17: San Miguel River above Naturita, Colorado
Started: October 28, 1961
Type: One grab sample per week

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
March 30-April 27	0.04	1.6
May 11-May 25	0.03	2.2
June 1-June 22	0.03	1.0
June 29	0.04	2.2
August 28	0.05	3.6
September 4-September 25	0.08	5.0
Current reporting period:		
Mean	0.05	2.6
Previous year (April 1968-March 1969):		
Mean	0.04	3.6
Std. Dev.	0.02	2.6

RMN Station 18: San Miguel River above Uravan, Colorado
Started: October 27, 1961
Type: Automatic Pump-Timer

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
March 30-May 4	0.10	3.0
May 11-May 25	0.07	2.2
June 1-June 29	0.05	2.9
July 16	0.05	1.6
August 28	0.10	5.1
September 4-September 25	0.09	5.0
Current reporting period:		
Mean	0.08	3.3
Previous year (April 1968-March 1969):		
Mean	0.10	4.9
Std. Dev.	0.03	2.9

RMN Station 20: San Miguel River below Uravan, Colorado
Started: October 9, 1961
Type: Automatic Pump-Timer

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
March 30-April 6	0.33	3.6
April 6-April 13	0.31	4.7
April 13-April 20	0.14	4.0
April 20-April 27	0.16	3.9
April 27-May 4	1.51	11
May 5-May 11	0.13	2.1
May 11-May 18	0.12	2.2
May 18-May 25	0.14	3.0
June 1-June 8	0.32	5.0
June 8-June 15	1.12	12
June 15-June 22	0.19	23
June 22-June 29	0.89	19
July 16	0.31	3.7
August 20	0.83	7.8
August 28	0.88	18
September 4	0.47	20
September 11	0.22	10
September 18	0.47	26
September 25	3.52	67
Current reporting period:		
Mean	0.63	13
Previous year (April 1968-March 1969):		
Mean	2.8	30
Std. Dev.	3.9	40

RMN Station 21: Dolores River at Bedrock, Colorado
Started: October 30, 1691
Type: Three grab samples per week

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
March 31-May 2	0.15	3.9
May 5-May 30	0.07	0.8
June 2-June 27	0.08	0.7
August 28	0.29	9.5
September 4-September 25	0.50	17
Current reporting period:		
Mean	0.22	6.4
Previous year (April 1968-March 1969):		
Mean	0.28	7.6
Std. Dev.	0.13	5.1

RMN Station 26: Dolores River at Gateway, Colorado
Started: October 30, 1961
Type: Three grab samples per week

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
March 31-May 3	0.43	6.9
May 5-May 31	0.30	4.2
June 3-June 27	0.86	8.4
August 28	0.69	37
September 4-September 25	0.73	18
Current reporting period:		
Mean	0.60	15
Previous year (April 1968-March 1969):		
Mean	1.4	21
Std. Dev.	0.9	12

RMN Station 30: Colorado River at U.S.-Mexican Border
Started: July 30, 1962
Type: One grab sample per week

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 1-May 4	0.17	7.7
May 5-May 29	0.10	8.4
June 2-June 27	0.15	6.4
June 30-August 1	0.15	8.0
August 4-August 29	0.19	7.0
September 23	0.12	7.0
Current reporting period:		
Mean	0.15	7.4
Previous year (April 1968-March 1969):		
Mean	0.13	7.3
Std. Dev.	0.04	0.8

RMN Station 31: Colorado River at Page, Arizona
Started: May 1, 1963
Type: 300-ml. composite per week

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 1-April 28	0.17	8.3
May 5-May 26	0.20	7.7
June 2-June 23	0.30	5.9
July 7-July 28	0.15	6.7
August 4-August 25	0.10	5.3
September 1-September 22	0.14	5.1
Current reporting period:		
Mean	0.18	6.5
Previous year (April 1968-March 1969):		
Mean	0.16	6.7
Std. Dev.	0.03	1.2

RMN Station 32: Colorado River at (Lake Mead) Boulder City, Nevada
Started: March 11, 1963
Type: One grab sample per week

Date	Radium-226 pg/liter	Uranium µg/liter
1969		
April 1-April 28	0.18	7.6
May 5-May 26	0.19	8.1
June 2-June 23	0.22	6.4
June 30-July 28	0.20	6.5
August 4-August 25	0.29	6.4
September 16	0.17	10
Current reporting period:		
Mean	0.21	7.5
Previous year (April 1968-March 1969):		
Mean	0.21	7.4
Std. Dev.	0.03	1.0